'THIS IS A BOOK WHOSE TIME HAS COME.'
—PROFESSOR DANI RODRIK, HARVARD UNIVERSITY

THE ENTREPRENEURIAL STATE

Debunking Public vs. Private Sector Myths

'Conventional economics offers abstract models; conventional wisdom insists that the answer lies with private entrepreneurship. In this brilliant book, Mariana Mazzucato... argues that the former is useless and the latter incomplete.'
—*Martin Wolf, 'Financial Times'*

MARIANA MAZZUCATO

'One of the Most Important Thinkers about Innovation', *New Republic*

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Introduction

DO SOMETHING DIFFERENT

> *…our disability is discursive: we simply do not know how to talk about things anymore.*
>
> Tony Judt (2010, 34)

A Discursive Battle

Never more than today is it necessary to question the role of the State in the economy – a burning issue since Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations* (Smith, 1776). This is because in most parts of the world we are witnessing a massive *withdrawal* of the State, one that has been justified in terms of debt reduction and – perhaps more systematically – in terms of rendering the economy more 'dynamic', 'competitive' and 'innovative'. Business is accepted as the innovative force, while the State is cast as the inertial one – necessary for the 'basics', but too large and heavy to be the dynamic engine.

The book is committed to dismantling this false image. In the same way that Mexico was stolen from California and Texas through the purposeful fabricated image of the 'lazy Mexican' under a palm tree (Acuña 1976), the State has been attacked and increasingly dismantled, through images of its bureaucratic, inertial, heavy-handed character. While innovation is not the State's main role, illustrating its potential innovative and dynamic character – its historical ability, in some countries, to play an *entrepreneurial* role in society – is perhaps the most effective way to defend its existence, and size, in a proactive way. Indeed, in *Ill Fares the Land*, Tony Judt (2010) describes that the attack on the welfare state, over the last three decades, has involved a 'discursive' battle – changing the ways we talk about it – with words like 'administration' rendering the State less important and adventurous. The book seeks to change how we talk about the State, dismantling the ideological stories and images – separating evidence from fiction.

This work is based on a revised and significant expansion of a report I wrote for DEMOS, a UK-based think tank, on *The Entrepreneurial State.* Unlike a more traditional academic piece of writing – that can take years from start to finish – I wrote the DEMOS work in a style similar to the political pamphlets of the 1800s: quickly, and out of a sense of *urgency*. I wanted to convince the UK government to change strategy: to not cut State programmes in the name of making the economy 'more competitive' and more 'entrepreneurial', but to reimagine what the State *can* and must do to ensure a sustainable post-crisis recovery. Highlighting the active role that the State *has* played in the 'hotbeds' of innovation and entrepreneurship – like Silicon Valley – was the key to showing that the State can not only facilitate the knowledge economy, but actively create it with a bold vision and targeted investment.

This expanded version of the DEMOS report (more than double its size) builds on

that initial research and pushes it harder, drawing out further implications at the firm and sectoral level. Chapter 5, dedicated entirely to Apple, looks at the whole span of State support that this leading 'new economy' company has received. After looking at the role of the State in making the most courageous investments behind the Internet and IT revolution, Chapters 6 and 7 look at the next big thing: 'green' technology. Unsurprisingly we find that across the globe the countries leading in the green revolution (solar and wind energy are the paradigmatic examples explored) are those where the State is playing an active role beyond that which is typically attributed to market failure theory. And the public sector organizations involved, such as development banks in Brazil and China, are not just providing countercyclical lending (as Keynes would have asked for), but are even 'directing' that lending towards the most innovative parts of the 'green' economy. Questions about whether such 'directionality' should raise the usual worries about the State's inability to 'pick winners' are confronted head on – demystifying old assumptions. The book also looks more explicitly at the collective group of actors that are required to create innovation-led growth and questions whether the current innovation 'ecosystem' is a functional *symbiotic* one or a dysfunctional *parasitic* one. Can a nonconfident State even recognize the difference? Chapters 8 and 9 go deeper into this question by asking how we can make sure that the distribution of the returns (rewards) generated from active State investments in innovation are just as social as the risks taken. Indeed, some of the very criticisms that have recently been directed at the banks (socialization of risk, privatization of rewards) appear to be just as relevant in the 'real' innovation economy.

The reason I call, both the DEMOS report and the current book, the 'entrepreneurial' State is that entrepreneurship – what every policymaker today seems to want to encourage – is not (just) about start-ups, venture capital and 'garage tinkerers'. It is about the willingness and ability of economic agents to take on risk and real *Knightian* uncertainty: what is genuinely unknown.[1] Attempts at innovation usually fail – otherwise it would not be called 'innovation'. This is why you have to be a bit 'crazy' to engage with innovation… it will often cost you more than it brings back, making traditional cost–benefit analysis stop it from the start. But whereas Steve Jobs talked about this in his charismatic 2005 Stanford lecture on the need for innovators to stay 'hungry and foolish' (Jobs 2005), few have admitted how much such foolishness has been 'seriously' riding on the wave of State-funded and -directed innovations.

The State… 'foolishly' developing innovations? Yes, most of the radical, revolutionary innovations that have fuelled the dynamics of capitalism – from railroads to the Internet, to modern-day nanotechnology and pharmaceuticals – trace the most courageous, early and capitalintensive 'entrepreneurial' investments back to the State. And, as will be argued fully in Chapter 5, all of the technologies that make Jobs' iPhone so 'smart' were government funded (Internet, GPS, touch-screen display and the recent SIRI voice activated personal assistant). Such radical investments – which embedded extreme uncertainty – did not come about due to the presence of venture capitalists, nor of 'garage tinkerers'. It was the visible hand of the State which made these innovations happen. Innovation that would not have come about had we waited for the 'market' and business to do it alone – or government to simply stand aside and provide the basics.

Beyond Fixing Failures

But how have economists talked about this? They have either ignored it or talked about it in terms of the State simply fixing 'market failures'. Standard economic theory justifies State intervention when the social return on investment is higher than the private return – making it unlikely that a private business will invest. From cleaning up pollution (a negative 'externality' not included in companies' costs) to funding basic research (a 'public good' difficult to appropriate). Yet this explains less than one-quarter of the R&D investments made in the USA. Big visionary projects – like putting 'a man on the moon', or creating the vision behind the Internet – required much more than the calculation of social and private returns (Mowery 2010).

Such challenges required a vision, a mission, and most of all *confidence* about what the State's role in the economy is. As eloquently argued by Keynes in the *The End of Laissez Faire* (1926, 46), 'The important thing for Government is not to do things which individuals are doing already, and to do them a little better or a little worse; but to do those things which at present are not done at all.' Such a task requires vision and the desire to *make things happen* in specific spaces – requiring not just bureaucratic skills (though these are critical, as pointed out by Max Weber)[2] but real technology-specific and sector-specific *expertise*. It is only through an exciting vision of the State's role that such expertise can be recruited, and is then able to map out the landscape in the relevant space. Indeed, a key part of DARPA's 'secret' – the agency that invented *and* commercialized the Internet within the US Department of Defense (examined in Chapter 4) – has been its ability to attract talent and create excitement around specific missions. And it is no coincidence that a similar agency in today's US Department of Energy, ARPA-E, is not only leading US green investments, but also having fun on the way (welcoming the trial and error process in energy research rather than fearing it) and attracting great brains in energy research (Grunwald 2012).

While many of the examples in the book come from the US – purposely to show how the country that is often argued to most represent the benefits of the 'free-market system' has one of the most interventionist governments when it comes to innovation – modern-day examples are coming more from 'emerging' countries. Visionary investments are exemplified today by confident State investment banks in countries like Brazil and China – not only providing countercyclical lending but also *directing* that lending to new uncertain areas that private banks and venture capitalists (VCs) fear. And here too, like in DARPA, expertise, talent and vision matter. In Brazil, it is no coincidence that BNDES, the State investment bank, is run by two individuals whose background is Schumpeterian innovation economics – and it is their team of experts that have allowed the bold risk taking in key new sectors like biotech and cleantech to occur. The bank is today earning record-level returns in productive, rather than purely speculative, investments: in 2010 its return on equity was an astounding 21.2 per cent (reinvested by the Brazilian Treasury in areas like health and education) while that of the World Bank's equivalent organization, the International Bank for Reconstruction and Development (IBRD), was not even positive (−2.3 per cent). Equally, it is the Chinese Development Bank that is today leading the country's investments in the green economy (Sanderson and Forsythe 2012). While the usual suspects worry that these public banks 'crowd

out' private lending (*Financial Times* 2012), the truth is that these banks are operating in sectors, and particular areas within these sectors, that the private banks fear. It is about the State acting as a force for innovation and change, not only 'de-risking' risk-averse private actors, but also boldly leading the way, with a clear and courageous vision – exactly the opposite image of the State that is usually sold.

From 'Crowding In' to 'Dynamizing In'

And this is the punchline: when organized effectively, the State's hand is firm but not heavy, providing the vision and the dynamic *push* (as well as some 'nudges' – though nudges don't get you the IT revolution of the past, nor the green revolution today) to make things happen that otherwise would not have. Such actions are meant to increase the courage of private business. This requires understanding the State as neither a 'meddler' nor a simple 'facilitator' of economic growth. It is a key partner of the private sector – and often a more daring one, willing to take the risks that business won't. The State cannot and should not bow down easily to interest groups who approach it to seek handouts, rents and unnecessary privileges like tax cuts. It should seek instead for those interest groups to work dynamically with it in its search for growth and technological change.

Understanding the unique nature of the public sector – as more than an inefficient 'social' version of the private sector – impacts the nature of the public–private collaborations that emerge, as well as the 'rewards' that the State feels justified to reap (an area I focus on in Chapter 9). An entrepreneurial State does not only 'de-risk' the private sector, but envisions the risk space and operates boldly and effectively within it to make things happen. Indeed, when not confident, it is more likely that the State will get 'captured' and bow to private interests. When not taking a leading role, the State becomes a poor imitator of private sector behaviours, rather than a real alternative. And the usual criticisms of the State as slow and bureaucratic are more likely in countries that sideline it to play a purely 'administrative' role.

So it is a self-fulfilling prophecy to treat the State as cumbersome, and only able to correct 'market failures'. Who would want to work in the State sector if that is how it is described? And is it a coincidence that the 'picking winners' problem – the fear that the State is unable to make bold decisions on the *direction* of change – is discussed especially in countries that don't have an entrepreneurial vision for the State, i.e. countries where the State takes a backseat and is then blamed as soon as it makes a mistake? Major socioeconomic 'challenges' such as climate change and 'ageing' require an active State, making the need for a better understanding of its role within public–private partnerships more important than ever (Foray et al. 2012).

Images Matter

The cover of this book shows a face of a lion and a pussycat. Which one has 'animal spirits' (Keynes's famous expression) and which one is domesticated and 'lags' behind due to passivity? Which is the State? Which is business? This might be an exaggerated dichotomy but it is one that needs consideration because, as I will argue, we are continuously fed the image of just the opposite: a roaring business sector and purring bureaucratic State sector. Even Keynes, in discussing the volatility of

private business investment, fed this contrast by talking about 'animal spirits' as guiding business investment – the image of a roaring lion. But in a secret letter to Roosevelt he also talked about business as 'domesticated animals':

> Businessmen have a different set of delusions from politicians, and need, therefore, different handling. They are, however, much milder than politicians, at the same time allured and terrified by the glare of publicity, easily persuaded to be 'patriots', perplexed, bemused, indeed terrified, yet only too anxious to take a cheerful view, vain perhaps but very unsure of themselves, pathetically responsive to a kind word. You could do anything you liked with them, if you would treat them (even the big ones), **not as wolves or tigers, but as domestic animals by nature**, even though they have been badly brought up and not trained as you would wish. It is a mistake to think that they are more immoral than politicians. If you work them into the surly, obstinate, terrified mood, of which domestic animals, wrongly handled, are so capable, the nation's burdens will not get carried to market; and in the end public opinion will veer their way… (Keynes 1938, 607; emphasis added)

This view, of business not as tigers and lions, but as pussycats means that the State is not only important for the usual Keynesian countercyclical reasons – stepping in when demand and investment is too low – but also at *any* time in the business cycle to play the role of real tigers. Nowhere is this truer than in the world of innovation – where uncertainty is so high. Indeed, the green revolution that is taking off in the world, only happens to coincide with a crisis environment (and in fact the government's relevant investments reach much farther back in time). But even if today were a boom period, there would not be enough investments being made in radical green technologies were it not for the State. Even during a boom most firms and banks would prefer to fund low-risk incremental innovations, waiting for the State to make its mark in more radical areas. But as with all technological revolutions, green technology requires a bold government to take the lead – as this was the case with the Internet, biotech and nanotech.

Providing such leadership, the State makes things happen that otherwise would not have. But whether this role is justified given the characteristics of 'public good' and the role of 'externalities' (both critical to the market failure argument), or whether it is justified due to a broader understanding of the State as a courageous actor in the economic system makes all the difference. The former understanding leads to discussions about the possibilities of the State 'crowding out' (or 'crowding in') private investment, creating a narrow view of what the State is and what policy options are acceptable (Friedman 1979). The latter understanding leads to (more) exciting discussions about what the State can do to raise the 'animal spirits' of business – to get it to stop hoarding cash and to spend it in new path-breaking areas. This makes a big difference in how one imagines the policy 'space'. For a start, it makes the State less vulnerable to hype about what the business sector can (and does) do. It is indeed the weakest States that give in (the most) to the rhetoric that what is needed are different types of 'tax cuts' and elimination of regulatory 'red tape'. A confident government recognizes fully that the business sector might 'talk' about tax but 'walks' to where new technological and market opportunities are – and that this is strongly correlated with areas characterized by major public sector investments. Did Pfizer recently leave Sandwich, Kent (UK) to go to Boston in

the US due to the latter's lower tax and lower regulation? Or was it due to the fact that the public sector National Institutes of Health (NIH) have been spending close to $30.9 billion per year in the USA funding the knowledge base on which private pharmaceutical firms thrive?

In economics, the 'crowding-out' hypothesis is used to analyse the possibility that increased State spending reduces private business investment, since both compete for the same pool of savings (through borrowing), which might then result in higher interest rates which reduces the willingness of private firms to borrow, and hence invest. While Keynesian analysis has argued against this possibility during periods of underutilized capacity (Zenghelis 2011), the point here is that *even in the boom* (when in theory there is full capacity utilization), there are in practice many parts of the risk landscape where private business fears treading and government leads the way. In fact, the spending that led to the Internet occurred mainly during boom times – as was the government spending that lead to the nanotechnology industry (Motoyama et al. 2001).

Thus a proper defence of the State should argue that it not only 'crowds in' private investment (by increasing GDP through the multiplier effect) – a correct but limited point made by Keynesians – it does something more. The way that I interpret Judt's challenge is that we must start using new words to describe the State. Crowding in is a concept that – while defending the public sector – is still using as a benchmark the negative: the possibility that government investment crowds out private investment, by competing for the same limited amount of savings. If we want to describe something positive and visionary, a word that is bolder and offensive, not defensive, should be used. Rather than analysing the State's active role through its correction of 'market failures' (emphasized by many 'progressive' economists who rightly see many failures), it is necessary to build a theory of the State's role in *shaping* and *creating* markets – more in line with the work of Karl Polanyi (1944) who emphasized how the capitalist 'market' has from the start been heavily shaped by State actions. In innovation, the State not only 'crowds in' business investment but also 'dynamizes it in' – creating the vision, the mission and the plan. This book is committed to explaining the process by which this happens.

The book tries to change the ways we talk about the State, in order to expand our vision of what it can do – it takes on Judt's 'discursive' battle. From an inertial bureaucratic 'leviathan' to the very catalyst for new business investment; from market 'fixer' to market shaper and creator; from simply 'de-risking' the private sector, to welcoming and taking on risk due to the opportunities it presents for future growth. Against all odds.

Structure of the Book

The book is structured as follows:

Chapter 1 begins by confronting the popular image of the State as a bureaucratic machine with a different image of the State as lead risk taker. The State is presented as an entrepreneurial agent – taking on the most risky and uncertain investments in the economy. Rather than understanding State risk taking through the usual lens of 'market failures' – with the State acting as an inert bandage for areas underserved by the market – the concept of its entrepreneurial risk taking is introduced. The State does not 'de-risk' as if it has a 'magic wand' that makes risks disappear. It *takes on* risks, shaping and creating new markets. The fact economists have no

words for this role has limited our understanding of the role the State has played in the past – in areas like Silicon Valley – and the role that it can play in the future, in areas like the 'green revolution'.[3]

Chapter 2 provides background to the discussion by looking at how economists understand the role of innovation and technology in economic growth. Whereas a generation ago, technological advance was seen as something that was externally given in economic models, there is now extensive literature to show that actually it is the rate – and direction – of innovation that drives the ability for economies to grow. The chapter juxtaposes two very different frameworks for understanding the role of the State in innovation-led growth – both framed in terms of different types of 'failures' that the State corrects. The first is the 'market failure' approach, in which the State is simply remedying the wedge between private and social returns. The second is the 'systems of innovation' approach, which looks at R&D spending in a more holistic way, as part of a system in which knowledge is not only produced but also diffused throughout an economy. But even in this second approach the State is mainly fixing failures, this time 'system failures' – with the conclusion being that it is 'facilitating' innovation by 'creating the conditions' for it. These frameworks have provided the justification for increased government spending on innovation, while at the same time – due to the lack of attention on the State as lead risk taker – allowed certain myths to survive. These myths describe the relationship between innovation and growth; the role of SMEs; the meaning of patents in the knowledge economy; the degree to which venture capital is risk-loving; and the degree to which investment in innovation is sensitive to tax cuts of different kinds.

Chapter 3 presents a different view, of an entrepreneurial State acting as a lead risk taker and market-shaper. This is not a substitute for the view espoused in the other two frameworks, but a complement, and one that by being ignored has caused policies informed by the 'failures' approach to be limited in nature, and often more 'ideologically' driven. Examples are provided from the pharmaceutical industry – where the most revolutionary new drugs are produced mainly with public, not private, funds. I also examine the way in which venture capital has 'surfed the wave' of State investments in biotechnology.

Chapter 4 exemplifies the key points on the 'entrepreneurial State' by focusing on the recent industrial policy history of the US, and shows that despite common perceptions, there the State has been extremely proactive and entrepreneurial in the development and commercialization of new technologies. Entrepreneurship by the State can take on many forms. Four examples – the creation of the Defense Advanced Research Projects Agency (DARPA), the Small Business Innovation Research (SBIR) programme, the Orphan Drug Act of 1983, and recent developments in nanotechnology – are used to illustrate this point. It builds on the notion of the 'Developmental State' (Block 2008; Chang 2008; Johnson 1982) pushing it further by focusing on the type of risk that the public sector has been willing to absorb and take on.

While Chapters 3 and 4 look at sectors, Chapter 5 focuses on the history of one particular company – Apple – a company that is often used to laud the power of the market and the genius of the 'garage tinkerers' who revolutionize capitalism. A company that is used to illustrate the power of Schumpeterian creative destruction.[4] I turn this notion on its head. Apple is far from the 'market' example it is

often used to depict. It is a company that not only received early stage finance from the government (through the SBIC programme, which is related to the SBIR programme discussed in Chapter 4), but also 'ingeniously' made use of publicly funded technology to create 'smart' products. In fact, there is not a single key technology behind the iPhone that has not been State-funded. Besides the communication technologies (discussed in Chapter 4), the iPhone is smart because of features such as the Internet, GPS, a touch-screen display, and the latest new voice activated personal assistant (SIRI). While Steve Jobs was no doubt an inspiring genius worthy of praise, the fact that the iPhone/iPad empire was built on these State-funded technologies provides a far more accurate tale of technological and economic change than what is offered by mainstream discussions. Given the critical role of the State in enabling companies like Apple, it is especially curious that the debate surrounding Apple's tax avoidance has failed to make this fact more broadly known. Apple must pay tax not only because it is the right thing to do, but because it is the epitome of a company that requires the public purse to be large and risk-loving enough to continue making the investments that entrepreneurs like Jobs will later capitalize on (Mazzucato 2013b).

Chapter 6 looks at the next 'big thing' after the Internet: the green revolution, which is today being led by the State, just like the IT revolution was. In 2012 China announced its plan to produce 1,000 GWs of wind power by 2050. That would be approximately equal to replacing the entire existing US electric infrastructure with wind turbines. Are the US and Europe still able to dream so big? It appears not. In many countries, the State is asked to take a back seat and simply 'subsidize' or incentivize investments for the private sector. We thus fail to build visions for the future similar to those that two decades ago resulted in the mass diffusion of the Internet. The chapter looks at which countries in the world are leading with a green vision, and the role of their States – and the 'patient' finance supplied by State development banks – in creating the 'catalytical' early, and risky, investments necessary to make it happen.

Chapter 7 focuses on the role of the 'entrepreneurial' risk-taking State in launching specific clean technologies, in this case wind turbines and solar PV panels. It was State funding and the work of particular State agencies that provided the initial push, early stage high-risk funding and institutional environment that could establish these important technologies. While Chapter 5 emphasized the role of the US entrepreneurial State in leading the IT revolution as well as in establishing the foundations of the biotech industry, this chapter emphasizes the role of countries like Germany, Denmark and China in directing the green revolution as it spreads across more economies.

Chapters 8 and 9 argue that once we accept the role of the State as lead risk taker – beyond the usual 'market fixing' or 'creating conditions' approach – the question arises as to whether this role is represented in the risk–reward relationship. In so many cases, public investments have become business giveaways, making individuals and their companies rich but providing little (direct or indirect) return to the economy or to the State. This is most evident in the case of pharmaceuticals, where publicly funded drugs end up being too expensive for the taxpayers (who funded them) to purchase. It is also true in the case of IT, where the State's active risk-taking investments have fuelled private profits, which are then sheltered and fail to pay taxes back to the governments that supported them. Chapter 8 illustrates this

point focusing in on Apple. Chapter 9 considers the points more generally, arguing that in a period of major cutbacks to reduce budget deficits, it is more critical than ever to engage in a discussion of how the State can ensure that its 'risk taking' earns back a direct return, beyond easily avoided taxation. Precisely because State investments are uncertain, there is a high risk that they will fail. But when they are successful, it is naïve and dangerous to allow all the rewards to be privatized. Indeed, criticism of the financial sector for launching the current economic crisis, reaping massive private returns and then socializing risk through unpopular bailouts is a general and unpopular feature of dysfunctional modern capitalism that should not become the norm.

Chapter 10 concludes by reflecting on how the core argument in the book – the State as an active, entrepreneurial, risk-taking agent – is not always a reality, but a possibility too often dismissed. The 'possibility' is only realized once key assumptions are overturned. From how we envision the State within its own organizations (encouraging departments in the public sector to be entrepreneurial, including the need to 'welcome' rather than fear failure), to the relationship between the State and other actors in the innovation system (e.g. by accepting itself as a more active agent, there will be many instances where the State's role is less about 'nudging' and 'incentivizing' and more about 'pushing'). The State's ability to push and direct is dependent on the kind of talent and expertise it is able to attract. And the irony is that the latter is more of a problem in countries where the State takes a back seat, only 'administering' and not leading with dynamic vision. Unless we challenge the numerous 'myths' of economic development, and abandon conventional views of the State's role in it, we cannot hope to address the structural challenges of the twenty-first century nor produce the technological and organizational change we need for long-term sustainable and equitable growth.

Taken as a whole, the book provides a fuller understanding of the public sector's centrality to risk-taking activities and radical technological change, essential to promote growth and development. It offers a very different description of the State from that envisaged by present economic policymakers, which tends to deny the State's leading role in innovation and production. It also challenges conventional industrial policy, which unduly downplays its scope for pioneering and promoting new technologies. In contrast, it describes scenarios where the State has provided the main source of dynamism and innovation in advanced industrial economies, by pointing out that the public sector has been the lead player in what is often referred to as the 'knowledge economy' – an economy driven by technological change and knowledge production and diffusion. From the development of aviation, nuclear energy, computers, the Internet, biotechnology, and today's developments in green technology, it is, and has been, the State – not the private sector – that has kick-started and developed the engine of growth, because of its willingness to take risks in areas where the private sector has been too risk averse. In a political environment where the policy frontiers of the State are now being deliberately rolled back, the contributions of the State need to be understood more than ever. Otherwise we miss an opportunity to build greater prosperity in the future by emulating the successful public investments of the past.

What is needed is a fully-fledged understanding of the division of innovative labour in capitalism (described in Chapter 1 below), and the role that both the private and public sector play in creating, producing and diffusing innovations.

The book focuses on innovation not because this is the only or most important thing the State can invest in. The State's role in guaranteeing basic human rights for all citizens – from public healthcare to public education – as well as creating the necessary infrastructure, legal and justice system that allows the economy to function properly are equally if not more important activities. The focus on innovation is due in part to the fact that it is a point of discussion where the State is most frequently attacked for its role. While the role of the private sector has typically been hyped up, the public sector's role has been hyped down. The State is often being cast as the problem, whether it is investing in new technology or improving market function. A key aspect of the challenge is therefore to rebalance our understanding of how economies really work. Only once that is done can we begin to formulate the kinds of policies that work, rather than reproduce stereotypes and images which serve only ideological ends.

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1 'Knightian uncertainty' refers to the 'immeasurable' risk, i.e. a risk that cannot be calculated. This economic concept is named after University of Chicago economist Frank Knight (1885–1972), who theorized about risk and uncertainty and their differences in economic terms.

2 Evans and Rauch (1999) show, for instance, that a Weberian-type State bureaucracy that employs meritocratic recruitment and offers predictable, rewarding longterm careers enhances prospects for growth, even when controlling for initial levels of GDP per capita and human capital.

3 Contemporary political economists, such as Chang (2008) and Reinert (2007), who specialize in the history of economic policy do of course talk about the role of the State in promoting a 'catching-up' process, or in actively acting countercyclically. Yet these are more in line with a view of the State not as an entrepreneurial risk taker (of *first* resort) but a more passive entrepreneur of last resort.

4 Joseph Schumpeter (1942 [2003]) referred to 'creative destruction' as the process by which innovation changes the status quo, allowing the market shares of firms which introduce new products and processes to grow, and those of the firms that resist change to fall.